PERBAIKAN BEBERAPA SIFAT FISIKA-KIMIA TANAH PSAMMENT DENGAN PEMBERIAN *BIOCHAR* DAN MULSA JERAMI PADI TERHADAP HASIL TANAMAN JAGUNG (*Zea mays*)

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ABSTRAK

Penelitian ini bertujuan untuk mengkaji pengaruh pemberian *biochar* dan mulsa jerami padi terhadap beberapa sifat fisika-kimia tanah Psamment serta hasil tanaman jagung (*Zea mays*). Penelitian ini telah dilaksanakan di Nagari Kataping Kecamatan Batang Anai Kabupaten Padang Pariaman Sumatera Barat dan di Laboratorium Jurusan Tanah Fakultas Pertanian, Universitas Andalas, Padang. Penelitian ini merupakan percobaan lapangan yang dilakukan dari bulan April sampai Desember 2019. Terdapat 4 perlakuan yaitu Kontrol/K (tanpa *biochar* dan mulsa jerami padi), perlakuan MJ (mulsa jerami padi 10 ton/ha), perlakuan B (*biochar* 20 ton/ha), dan perlakuan B+MJ (*biochar* 20 ton/ha + mulsa jerami padi 10 ton/ha) dengan 3 ulangan. Satuan percobaan di alokasikan di lapangan berdasarkan Rancangan Acak Kelompok (RAK). Data hasil penelitian dianalisis dengan *Analysis of Variance* (ANOVA) dan selanjutnya apabila hasil yang diperoleh berbeda nyata (F hitung lebih besar dari F tabel 5%) dilanjutkan dengan uji *Duncan New Multiple Range Test* (DNMRT) pada taraf 5%. Hasil penelitian terbaik terdapat pada perlakuan B+MJ (*biochar* 20 ton/ha + mulsa jerami padi 10 ton/ha) karena mampu menurunkan nilai berat volume tanah sebesar 0,23 g/cm^3, meningkatnya total ruang pori tanah 4,64 %, meningkatkan pori air tersedia 4,6 %volume, meningkatkan kandungan bahan organik tanah 1,26%, meningkatkan pH tanah 0,19 unit, meningkatkan N total 0,04% P tersedia 22,87 ppm dan KTK 5,9 me/100g. Meningkatkan kandungan N dan P tanaman (0,07%; 0,008 ppm) serta menunjukkan tinggi tanaman tertinggi (235,80 cm) dan hasil (berat tongkol berbiji) tertinggi yaitu mencapai 10,13 kg/plot.

Kata kunci: *Psamment, biochar, mulsa, jagung*

IMPROVEMENT OF PHYSICO-CHEMICAL PROPERTIES OF PSAMMENT BY BIOCHAR AND PADDY STRAW MULCH APPLICATION ON CORN (*Zea Mays*) YIELD

ABSTRACT

This research was aimed to study the effect of biochar and paddy straw mulch application on physico-chemical properties of Psamment and corn (*Zea mays*) yield. This research was conducted in Nagari Kataping, Batang Anai, Padang Pariaman Regency, West Sumatra, and Soil Laboratory, Faculty of Agriculture, Andalas University, Padang. This research was in form of field experiment conducted from April to December 2019. There were four treatments, those were Control/K (without biochar and paddy straw mulch), MJ (paddy straw mulch 10 ton/ha), B (biochar 20 ton/ha), and B+MJ (biochar 20 ton/ha + paddy straw mulch 10 ton/ha) with three replications. The treatment units were allocated based on Randomized Block Design (RBD). The results of this research were analyzed the variance (ANOVA) using F-test, if the results were significant (F calculated > F table), the analysis were followed with Duncan New Multiple Range Test (DNMRT) at 5 % level of significance. The best result found was under B+MJ (biochar 20 ton/ha + paddy straw mulch 10 ton/ha) treatment because it could decrease soil bulk density by 0.23 g/cm^3, and increased total pore space by 4.64 %, available water pore by 4.6 % volume, soil organic matter by 1.26 %, soil pH by 0.19 unit, total-N by 0.04 %, P-availability by 22.87 ppm, and cation exchange capacity by 5.9 cmol/kg. Application of B+MJ (biochar 20 ton/ha + paddy straw mulch 10 ton/ha) could also increase N and P content of crop (0.07 % ; 0.008 ppm) and showed the highest crop height (235.80 cm) as well as crop yields especially weight of corn cobs with seeds (10.13 kg/plot).

Keywords: *Psamment, biochar, mulch, corn crop*